IN THE CLAIMS:

1. (Currently Amended) A gain-clamped semiconductor optical amplifier comprising:

an active waveguide having an input and output side;

clad layers surrounding the active waveguide; and

a grating, which is formed partially at both end parts ~~under~~ **of** the input and output sides ~~of~~ **under** the active waveguide**, and**

wherein the semiconductor device does not include a passive waveguide for light to pass after obtaining gain by passage in the active waveguide.

2. (Original) The optical amplifier as claimed in claim 1, wherein the grating is asymmetrically formed so that the input and output sides of the active waveguide have different reflection factors from each other.

3. (Original) The optical amplifier as claimed in claim 1, wherein the active waveguide further comprises at least one mode alteration area, formed on a portion of each end part of the active waveguide for use in optical coupling for an optical fiber.

4. (Original) The optical amplifier as claimed in claim 3, wherein the grating is formed on positions inward from each mode alteration area, respectively.

5. (Original) The optical amplifier as claimed in claim 1, wherein the active waveguide is made from an InGaAs or InGaAsP.

6. (Original) The optical amplifier as claimed in claim 1, wherein the active waveguide is formed with a length of 300 to 1500μm, a width of 0.8 to 3.0μm, and a thickness of 400 to 3000Å

7. (Original) The optical amplifier as claimed in claim 5, wherein the grating is made from an InP in which InGaAs or InGaAsP is periodically formed.

8. (Original) The optical amplifier as claimed in claim 1, wherein the grating is formed so that a length of one grating is 1/300 to 1/3 of the whole length of the active waveguide, a thickness of one grating is 50 to 500Å, and a separation between the upper end of the grating and the lower end of the active waveguide is 500 to 3000Å.

9. (Original) The optical amplifier as claimed in claim 2, wherein the input side of the grating has a reflection factor which is 4 to 100 times as high as that of the output side of the grating.

10. (Original) The optical amplifier as claimed in claim 3, wherein the mode alteration area has a length of 30 to 300μm.

11. (Original) The optical amplifier as claimed in 2, wherein the active waveguide further comprises at least one mode alteration area, formed on a portion of each end part of the active waveguide for use in optical coupling for an optical fiber.

12. (Currently Amended) A gain-clamped semiconductor optical amplifier comprising:

a active waveguide;

clad layers surrounding the active waveguide; and

a grating that is formed under a portion of the active waveguide**; and**

wherein said device does not include a passive waveguide adapted for light to pass after obtaining gain by passage in the active waveguide.

13. (Original) The optical amplifier as claimed in claim 12, wherein the portion of grating is at least formed under one of an input and output sides of the active waveguide.

14. (Original) The optical amplifier as claimed in claim 12, further includes at least one mode alteration area, formed on a portion of each end part of the active waveguide for use in optical coupling for an optical fiber.